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ABSTRACT

A study examined training and staff development initiatives in Australian industrial and commercial organizations. It was carried out using a questionnaire and structured interview technique with 24 organizations. Larger organizations had their own facilities and trained in-house whereas smaller organizations made more use of Technical and Further Education (TAFE) facilities. Most of the general staff training was operator/skills training. The staffing of training functions in organizations varied enormously with great variations in the arrangement of responsibility for training. Types of training methods varied depending on whether participants were apprentices, general staff, or management. The most used techniques were classroom lectures, practical sessions, and on-the-job instruction. The overall impression of current training and staff development in Australian industry was depressing. Apprentice and management training were well managed and run, but the overriding impression of industrial training in Australia was that it was uncoordinated and ad hoc. Where there was an identifiable model in industrial training, it resembled a systems approach, which tended to create somewhat static training activities. What was needed was a more open model that would allow input from industry, TAFE, and government and encourage cooperation. (The questionnaire is appended.) (YLB)

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TAFE

TAFE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT

TRAINING MODELS USED IN INDUSTRY

JOHN BONE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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TAFE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT LTD

JOHN BONE

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1. INTRODUCTION

A skilled workforce and competent management are essential for the health of our economy. In a time of rapid technological change and significant economic pressures there is an urgent need to ensure that both management and workforce are sufficiently well equipped with the appropriate skills to do the job. Further, in a society that is increasingly being made aware, through the actions of pressure groups and government legislation, of rights and obligations in the workplace, it is becoming incumbent on organisations to ensure that their employees have the training required to do their jobs efficiently and safely. Further, training should extend beyond this basic level, not only to offer employees the opportunity for career progression and job satisfaction, but also to ensure that the organisation remains abreast of technology and market challenges by taking maximum advantage of the potential of its human resources.

This report deals with training and staff development initiatives in Australian industrial and commercial organisations It attempts to describe various aspects of training including the organisational philosophy or approach to staff training, the methods adopted in identifying training needs, developing training initiatives, presenting training activities and evaluating the effectiveness of the training undertaken in each organisation. These aspects are considered in terms of training models and their appropriateness and effectiveness are discussed.

2. TRAINING MODELS

A training model is a stylised representation of a particular approach or system used in training. Two major types are considered in terms of training models in this present study; firstly, the educational methodology model - that is, the educational framework in which the training takes place; and secondly, the strategic approach model - that is, the corporate philosophy framework in which the training takes place.

The educational methodology framework is determined by the professional expertise and teaching style of the training staff, the quality and variety of the training facilities and the educational level of the training recipients. The strategic approach framework is determined by the corporate philosophy, the commercial and/or political considerations used to determine training needs, training strategies and the corporate objectives set for the training initiatives.

2.1 THE EDUCATIONAL METHODOLOGY FRAMEWORK

In a discussion on educational models, Lane (1986) suggests that, if trainers

> are going to assist in developing effective organisations (they) can do so by not changing . . . basic teaching style but by gradually adding at least four more options to it (p.12).

He describes five educational models - exposition, behavioural, cognitive developmental, interaction and transaction and proposes that they all have their place depending on the subject matter being taught and the individuals involved in the learning.

The exposition model is predominantly 'teacher-centred'. The behavioural model is where learning is broken into small steps with trainees required to master each step before progressing onto the next. It too tends to be teacher-centred and not to allow for individual differences between trainees. The cognitive developmental model uses problem-solving at a level commensurate with the age of the trainee. The interaction model is learner-centred and includes interaction between learners. Lastly the transaction model involves the learners in developing their own learning strategy and taking responsibility for their own progress, with the trainer acting as a facilitator.

reference to training was usually included in personnel policies and practices manual and couched in very general terms. One document the author was shown after a frantic search through the files was dated 1978 and it appeared that my request was the first occasion it had seen the light of day.

4.9 LIAISON WITH OTHER EDUCATIONAL AGENCIES

Very few organisations reported any liaison with other educational or training agencies. Three institutes of technology and the Australian Maritime College were mentioned, as also were the universities and the Australian Graduate School of Management. Invariably, further investigation revealed that 'liaison' meant nothing more than advising staff of the existence of these institutions or enrolling staff - usually managers - in degree courses at the institutions. Apart from one example of a training manager on a course committee at an institute of technology, it seemed that industrial trainers were not in touch professionally with other education or training agencies.

4.10 LIAISON WITH TAFE

Most organisations that had apprentice training schools reported liaison with TAFE. Comments like 'discussions with heads of divisions and heads of school', regular visits and written communication', 'reasonable liaison with subject matter experts', full involvement in all states. Membership of trade advisory committees and college committees (including traineeships) indicated a reasonable level of contact between trainers in industry and TAFE in the area of apprentice training. Discussion revealed, however, that there was a marked lack of understanding between industrial trainers and TAFE personnel. There was almost no use made of TAFE courses or expertise in areas of training other than for apprentices. The reasons given for not using TAFE courses of lecturing staff for general staff training included perceived lack of understanding on the part of TAFE of the precise needs of the company, lack of appropriate courses, inconvenience of times or location and difficulty of releasing staff at set times to go to classes. When asked why TAFE expertise was not used to assist in the development of in-house courses, most industrial trainers admitted they had never really considered the possibility.

In the commercial and industrial setting there could be a tendency for the educational methodological model to be somewhat simplistic because of the popular view that training is more restricted than education and because the trainers involved in the preparation and presentation of the training are more likely to have had less training or experience themselves in the business of teaching than those in educational institutions. If this is the case then, as Lane suggests, there could be a need to develop strategies to encourage trainers to broaden their methodological approaches.

2.2 THE STRATEGIC APPROACH FRAMEWORK

Kane (1986) suggests that training and development in industry and commerce are in a less than favourable position. Less than a quarter (23%) of executives ranked training and development as the first or second most important function in personnel management with only 16% considering that it would be first or second most important in ten years time (Bosman, 1984). Kane proposes that there are various approaches to training adopted by organisations which are determined by three factors,

> what the organisation's decision makers believe is needed, what will be accepted by management and staff, and what resources will be made available. (Kane, 1986, p.51)

He describes five approaches which he labels Ostrich, Cafeteria, Development, Results and Planning, and goes on to tabulate the advantages and disadvantages of these approaches to the organisation. The Ostrich approach is one in which the organisation relies on either recruiting employees who already have the required skills to do their job, or are expected to pick up those skills 'on-the-job' The Cafeteria approach is adopted by organisations in which some of the management believe that training 'is a good thing' and where a variety of training courses, internal and external, are publicised and employees encouraged to attend. A logical extension to the Cafeteria approach, which overcomes some of the latter's limitations, is the Individual Development approach. This approach is based on some form of development-oriented staff appraisal. A natural expansion that usually comes from this approach is the inclusion of activities other than attendance at particular courses. These include job rotation and action learning projects. An alternative to the Cafeteria approach taken by some organisations is the Results-Oriented approach. This technique concentrates on quantification and cost-benefit analysis with course evaluation playing an important role. This approach tends to result in short-term planning as long-term effects or benefits are too difficult to assess. The final approach described by Kane is the Human Resource Planning approach. This approach does consider the longer term effects of training and

5. DISCUSSION

The project itself was approached with certain assumptions. These assumptions shaped the research methodology and questionnaire. At the interview stage, however, it soon became apparent that these assumptions created a framework that was not shared by the majority of industrial/commercial trainers with whom the author spoke.

Thus the original research framework of a 'top-down' formal, systems approach to training in which the intention was to compare current training models in industry with a 'standard systems training model' did not match up to the reality that the author found.

The assumption that, by using the usual areas of training needs analysis, preparation, assessment and evaluation, a series of real life variations of training models would emerge, proved erroneous. Although most trainers were familiar, at least to some extent with these various aspects of a systems training model, in many cases their major concerns were not perceived in such terms.

Thus, although the search for models revealed some examples, the more important information to come out of the interviews was a concern for the relevance and control of training and development activities.

5.1 MODELS

This is not to deny that models, of the traditional variety did not exist. Probably the most developed and most thoroughly applied systems model in use in Australia today is the Royal Australian Navy training model. (See fig. 1)

All training in the RAN, from basic recruit training to sophisticated weapons training is designed, presented and evaluated using this model. There is little doubt that this model produces effective and easy to manage training but ultimately it is most suited to operator training and therefore imposes some limitations on teaching strategies.

attempts to integrate the training program into the overall human resource plan for the organisation. Kane concludes that there is not one best approach and that organisations when making decisions on training initiatives need to consider the objectives set for the training, the resources available, where the organisation currently is and where it wants to be in five or ten years time. If the research that Kane cites is indicative of the low level of importance given by management to staff training, this could be reflected in the effectiveness of training initiatives in industry.

There is a movement presently gathering momentum in society that advocates the shifting of educational focus at all levels but particularly at post-secondary level, towards vocational usefulness and within this context towards the practical rather than the theoretical. (Williams, 1985) In addition to this, recent legislation in the Occupational Health and Safety area and, to a lesser extent in the equal opportunity and affirmative action areas has had important ramifications in corporate approaches to training and staff development. The recently reported High Court overruling of a dismissal on the grounds of insufficient training, (Delahaye, 1987), is an indication that training in industry and commerce is becoming accepted as a necessity, not a luxury. If this trend continues, it will be important to ascertain whether training functions in industry are sufficient for the task of providing training, the effectiveness of which will stand up in a court of law.

2.3 ASSESSMENT OF TRAINING MODELS

This study examines the strategic and educational approaches to training in a number of Australian organisations and attempts to assess whether these approaches are proving effective. One of the most respected approaches for the organisation, management and delivery of training is the Instructional Systems Development (ISD) approach (Campbell, 1987). This has been used for several decades and probably its most refined form being used in the military training establishments in America, Britain and Australia. Although this approach is certinly not new, it is difficult to fault and certainly provides a 'yardstick' for any training program.

Briefly the ISD approach has five phases - analyse, design, develop, implement and control. The training programs investigated in the present study were examined with these five steps in mind.

Thus the strategic approach and the educational methodology adopted by the training functions in each organisation were considered in each case under each of the five ISD phases.

. **Analyse**

In looking at the analysis phase of an organisation's training model, attention was given to assessing the thoroughness with which the training needs were analysed and the task, job and existing course analyses were done. Also it was necessary to look at the method of choosing the instructional setting.

. **Design**

In the design phase, objective setting, selection and testing methods and course structure were observed.

. **Develop**

Course development is an important area and an assessment of the quality and effectiveness of the selection of learning activities and production of instructional materials used was made.

. **Implement**

The investigation into the implementation of the training included assessment of the management and delivery of the instruction

. **Control**

The assessment of the control phase involved looking at the internal and external evaluation and quality control and the strategies for revision and updating of the training material and methodology.

In investigating corporate philosophy and the strategic approach to training in Australian organisations, it was expected that there would be considerable variations between organisations depending on size, whether public or private, big or small, manufacturing or service.

Regardless of the strategic approach it has become critical for organisations to have a corporate policy on training. As Garrett (1987) states

> . . . for any organism to survive, its rate of learning must be equal to or greater than, the rate of change in its environment (L => C). (Garrett, 1987, p.38)

In the rapidly changing social, technological and economic climates, it is imperative that organisations build into their corporate systems the ability at least to maintain the level of learning of their employees in order to prevent the company's commercial decline.

In the needs analysis phase of training, organisations would likely to be concerned to determine out those skills areas that needed to be taught to their employees in order to increase productivity, cope with technology advances or improve management procedures. There would be some attention to the necessity to impart the knowledge and skills required to prevent accident or injury, and some cognisance of the value of training for succession planning or career development.

It was believed that the design and development phases of training, would be left to 'experts' and be the responsibility of training personnel. In the designing and developing of training initiatives it was important to look for the criteria used in establishing goals and training objectives and determining the sequence of training activities.

Implementation would also depend largely on the training staff, but operations managers and others such as subject specialists would influence this aspect of the training process. In the implementation of training in organisations, the corporate philosophy would determine the 'climate' in which the training was performed. This would include the level of spending on staff and facilities, and the quality of those facilities. The methods of control of training activities would be influenced by the corporate philosophy in a variety of ways taking into account whether evaluation was done internally or externally, what criteria were used for success and whether short-term or longer term perspectives were used.

It was anticipated that the educational methodology models of corporate training in Australia would display considerable variations. In the analysis phase, previous research (Hayton, 1987) had indicated that there was a marked lack of systematic use of recognised needs analysis techniques and it was not uncommon for no formal training needs analysis to be done at all. In the author's experience it was also quite usual for senior executives to suggest giving employees some training even when it had not been clearly established that lack of training was the real problem. Furthermore the nature of the outcomes of the suggested training were also uncertain and unknown. Thus the investigation would be carried out bearing these points of concern in mind.

3. METHODOLOGY

The study was carried out using a questionnaire (See Appendix A) and structured interview technique. Organisations in 4 states were contacted and questionnaires posted out in advance of interviews. In all, 24 organisations contributed to the study providing a considerable amount of information on training activities in both the private and public sectors.

The responses to the questionnaires and the information from the interviews were collated to give an overall picture of training in industry, which is presented in the next section. It is acknowledged that this picture did not come from a random sample, nor indeed from a large sample, so it is important not to view it as statistically representative of industry training throughout Australia. Nevertheless a genuine attempt was made to obtain information from as wide a spectrum of organisations as possible, given the limitations of finances and time, and it is believed that the results do give a realistic picture of the state of training in a significant section of Australian industry and commerce. More importantly, it is hoped that this report will be used by organisations to compare their training initiatives with the generalisations made, with a view to capitalising on the strong aspects of their initiatives and seeking to co-operate with other organisations and training agencies in the areas where they feel their training effectiveness could be improved.

4. RESULTS

The questionnaires revealed a wealth of information that is summarised below.

4.1 SUMMARY STATISTICS

Individuals in 24 organisations across Australia were interviewed. In four of the large organisations there were two (or more) discrete training functions for separate parts of the company. Thus, in all, 28 questionnaires were completed and interviews were conducted. The following brief summary statistics give an idea of the scope of this sample:

Table 1 Summary statistics

SECTOR		
PRIVATE SECTOR ORGANISATIONS	**********	16
PUBLIC SECTOR ORGANISATIONS	********	8
SIZE		
< 1000 EMPLOYEES	*******	7
> 1000 < 2000 EMPLOYEES	******	6
> 2000 < 8000 EMPLOYEES	*****	5
> 8000 EMPLOYEES	******	6
LOCATION		
NSW	********	8
SA	******	6
TAS	**	2
VIC	********	8

4.2 RANGE OF TRAINING UNDERTAKEN

. Apprentice training

The larger organisations have their own facilities and train in-house while smaller organisations make more use of TAFE facilities. There is a wide range of trades offered, with some organisations providing very specialist training in rare skills such as printing on highly sophisticated multi-million dollar printing presses. Some organisations train apprentices for

other companies. A large proportion train apprentices anticipating that significant numbers will seek employment elsewhere on completion. TAFE facilities are used for 'special' equipment, eg CNC machines, large scale catering.

- General training

Most of the general staff training was, understandably, operator/skills training A significant part of this organisation specific, such as 'in-flight service skills' but much was of a type that would be applicable to a wide range of institutions. Topics such as 'customer contact', 'written communication', 'safety and interpersonal skills' were repeated in most of the organisations. If the standard of course materials, course outlines and leaders' handbooks are any indication, the standard and likelihood of success of this type of training varied considerably. Very little use was made of TAFE facilities for general staff training.

- Supervisor management training

Large organisations have comprehensive training programs for managers and there is considerable use of outside consultants or training 'packages'. There is generally a lack of emphasis on supervisor training. Very little use is made of TAFE for management or supervisor training.

4.3 TRAINING AND DEVELOPMENT STAFF AND FACILITIES

The staffing of training functions in organisations varies enormously. One organisation of less than 5000 employees had a training staff of 23, including 3 officers highly qualified in education and teaching skills. Other much larger organisations relied on one or two individuals recruited from operations or mechanical branches with little or no teaching background.

However, it is very difficult to compare staff training facilities in different organisations since there are so many variations in the way that responsibility for training is arranged. In several organisations every supervisor had training obligations as a part of his or her duties and the training officer had more of a co-ordinating and consulting role. Nevertheless less, it was possible to gain an impression of the company's commitment to training by the overall level of staffing and training expertise in the raining departments. Unfortunately, the impression, in at least half of the companies visited, was not encouraging.

4.4 IDENTIFICATION OF TRAINING NEEDS

Table 2 below gives the responses to the questions on training needs analyses.

Table 2 Methods used in training needs analyses

METHOD	APPRENTICE TRAINER	GENERAL STAFF TRAINING	MANAGEMENT & SUPERVISED TRAINING
1 CODAP method		2	
2 DACUM method		3	1
3 Task analysis method	3	7	1
4 Critical incident technique		3	4
5 Delphi method		1	
6 Nominal group technique			1
7 Force field analysis		2	2
8 Other observation methods	1	8	6
9 General mail survey methods	1	6	4
10 General interview methods	2	12	10
11 Other method (please specify)	on going	on going	on going

Only 18 of the 28 organisations had undertaken any needs analysis at all, although two more indicated they were about to embark on some sort of needs analysis in the near future.

Of those 18, only a few had attempted anything other than a general survey, observation or interview method. The impression gained was that for most organisations training needs analyses were not seen as priorities by management. Many training managers appeared unfamiliar with such techniques as CODAP, DACUM, Nominal Group and Delphi, and some were either indifferent or slightly embarrassed by the corporate attitude to this vital part of effective training methodology.

General staff training was the area where training needs analyses were taken seriously with task analysis forming an important aspect of the process. One organisation involved in tourism and insurance had completed an impressive needs analysis for travel tour co-ordinators which included job and task analyses, a type of DACUM technique, with input from customer

feedback. The result was a well structured course which proved most effective in terms of employee confidence and increased business in the tour operations.

Organisations that had conducted needs analysis indicated that the results were normally implemented. Very few needs analyses for apprentice training were undertaken. The view was that apprentice courses were 'laid down' and therefore there was no need for any analysis.

There was some confusion in the minds of some trainers who considered that requests for training by division or section managers constituted some sort of 'needs analysis. Particularly in organisations that had a 'Cafeteria' approach to training there was a tendency to equate nominations for set courses as confirmation of need.

4.5 COURSE DEVELOPMENT

Responsibility for the scope of training in most organisations rested with operations or functional managers with possibly some input or advice from the training manager. Course development was usually the responsibility of the training manager with subject specialists such as technical instructors or superintendents often taking part.

In most cases, there was little evidence of help from outside agencies, such as TAFE, in the development of in-house courses, even in the apprentice areas. With some notable exceptions, where the standard of syllabus documentation, course design and course materials were very high, the general standard was, at best fair and at worst abysmal. IT was not unusual to find course notes that were 'Roneo' duplicated, barely readable and, in some cases, over a decade old. Syllabus and session note documentation was often scarce and scrappy or missing altogether.

On the other hand, some of the acceptable material was excellent. Courses were well designed with systematic leaders' handbooks together with well printed, illustrated and bound participants' notes and workbooks. Some of the larger organisations also produced good quality audio-visual material - video productions and tape-slide sequences - that were shown in fully equipped theatrettes with large format screens and dimming lights.

There is no doubt that those responsible for the production of this material gained their inspiration from pre-existing work, but one could not help but get the impression that, for some of the more common training courses, like customer contact, the 'wheel was being reinvented' all over Australia. Thus, even for those organisations who do it well, and most definitely for those who don't, co-operation and assistance in the area of course design and development would be most advantageous.

4.6 TRAINING METHODOLOGIES

The types of training methods used varied depending on whether the participants were apprentices, general staff or management, see Table 3.

The most used techniques were classroom lectures, practical sessions and on-the-job instruction. Very little computer-based instruction was carried out except for the training of computer terminal operators.

- **Apprentices**

The teaching methods adopted for apprentices were almost exclusively classroom lectures, practical sessions and on-the-job instruction. Instructors were often minimally trained in teaching skills and methods tended to be expositional or behavioural. (See section 2.1)

- **General**

General staff training overwhelmingly consisted of on-the-job instruction, practical sessions and classroom lectures. Some syndicate group work and workshop techniques were also used but this tended to be in those organisations where external courses or packaged courses were run for operations staff. Again there was little evidence of interactional or transactional models of educational methodology.

- **Supervisor manager**

Not surprisingly, managers made the most use of residential courses, seminars and syndicate groups. Practical sessions and classroom lectures were also used by managers and supervisors. Educational methodology was far more varied for this group and included all the models described by Lane (1986). The most telling aspect in this area and brought out by the interviews was the lack of supervisor training of any sort. In fact, treating the two categories together was a weakness in the questionnaire design that tended to mask the wide differences in corporate emphasis on training for these two groups.

Table 3 Training methodologies used in industrial training

APPRENTICE TRAINING	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures	10	3	0	14
Practical sessions	10	2	1	14
Structured video courses	1	5	5	16
Computer-based training packages	0	2	6	19
On-the-job instruction	10	4	0	13
Syndicate groups	0	6	4	17
Seminars/workshops	2	5	3	17
Residential courses	1	2	2	22

GENERAL TRAINING	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures	17	5	2	3
Practical sessions	21	5	1	0
Structured video courses	6	9	8	4
Computer-based training packages	2	11	4	10
On-the-job instruction	20	6	1	0
Syndicate groups	11	9	5	2
Seminars/workshops	13	8	4	2
Residential courses	4	6	5	12

SUPERVISOR/MANAGEMENT TRAINING	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures	18	3	1	5
Practical sessions	19	4	2	0
Structured video courses	4	6	4	6
Computer-based training packages	0	8	4	11
On-the-job instruction	4	9	5	5
Syndicate groups	19	5	0	1
Seminars/workshops	19	5	2	0
Residential courses	11	7	4	2

Wittingslow (1986) in his research into supervisor behaviour found that less than 5% of supervisors in Australia had any training for supervisory tasks before they were made supervisors, or for up to two years after being appointed. The present research, although indicating a somewhat higher figure (25%, i.e. 6 of the 24 organisations reported the inclusion of training activities specifically for supervisors, although it is uncertain whether all supervisors would receive this training before appointment or even soon afterwards), only confirms this serious deficiency in the training functions of the bast majority of Australian companies.

Management training in many organisations was quite well established, with a wide range of in-house and externally provided courses. The larger organisations often produced training and development handbooks listing and detailing all the courses available for middle and senior management. Supervisors on the other hand, were far less well catered for and not infrequently ignored altogether.

4.7 USE OF EXTERNAL AGENCIES

Considerable use was made of consultants for management training both in delivering training on-site and off-site. Specialist organisations like St.John Ambulance for first-aid and major suppliers for computer terminal or software operation, were used for general staff training. For middle and senior management training, the Australian Institute of Management courses were cited, as were those of the Australian Graduate School of Management. The Kepner Tregoe organisation was one that provided a comprehensive range of training for management, supervisors and general staff in a way that provided a 'common language' which was often used as a basis for other corporate systems such as TQC., Quality Circles or suggestion schemes. Tertiary institutions were used to some extent by management, particularly for individual study in specialist areas. TAFE appeared to be little used in any area of training other than formal apprentice courses.

4.8 ASSESSMENT AND EVALUATION

- <u>Assessment</u>

Not surprisingly, there was less formal assessment of managers and supervisors than of general staff and apprentices. Also self-assessment was far more likely to be used for supervisors and managers than for the other groups. The questionnaire responses indicating methods used to assess participants are given in Table 4.

Table 4 Assessment methods used in industrial training

	APPRENTICE F/A	GENERAL STAFF	SUPERVISOR/ MANAGER
Written tests	15	8	5
Written exams	15	5	3
Continuous assessment	13	13	12
Practical tests	14	13	7
Observation	11	18	17
Follow-up observations on job	10	15	18
Other (please specify)	Task book	Task book	
None			

Discussion with trainers in some organisations revealed a wide knowledge of assessment techniques. Some organisations used well constructed assessment procedures, particularly in the operations training area where a competency-based teaching mode was used together with skills cards or other record documentation. Other organisations, however, displayed a serious lack of suitable assessment strategies and the attitude seemed to be that it was the employees' fault if he or she did not cope with the training and would have to get on as best he or she could, picking up any unlearned skills back on the job.

. Evaluation

Evaluation of the effectiveness of training was done mostly by 'internal review' and, for general and management training by 'participant reaction questionnaire'. In answer to the question, 'To what use do you put the results of your evaluation?' most trainers indicated that they used it to revise course design although one was honest enough to reply 'File it!'

As with assessment there were examples of lack of effective evaluation techniques, which was surprising since one would assume that private companies particularly, would want to know what value they were getting from their training dollar. In reality, rather than attempting to measure the desired outcomes of training, the measures used were more likely to be how well the training department kept within its budget, or how low the unit cost of training for one employee could be brought-often by comparing in-house and external training.

One of the difficulties encountered in attempts by trainers to evaluate training effectiveness was a lack of clarity about corporate goals for training. The request to see the corporate policy on training usually brought blank stares. There were a few companies with documented training policies, but even then

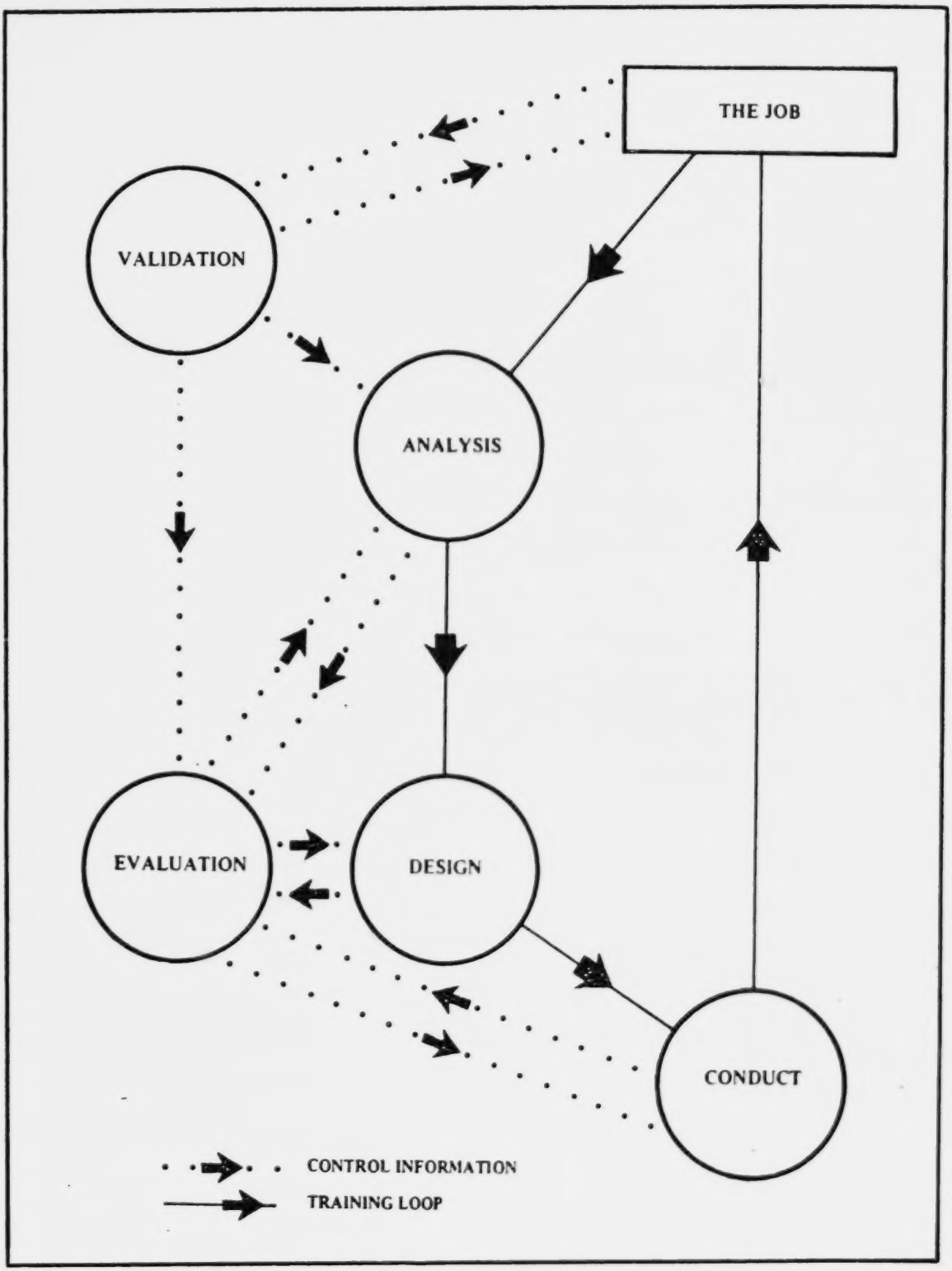

Figure 1. Royal Australian Navy functional process model

With many industrial trainers being trained through the NTTS programmes it was not surprising to see several examples of the application of the systems approach taught by the Train the Trainer service. (See fig. 2)

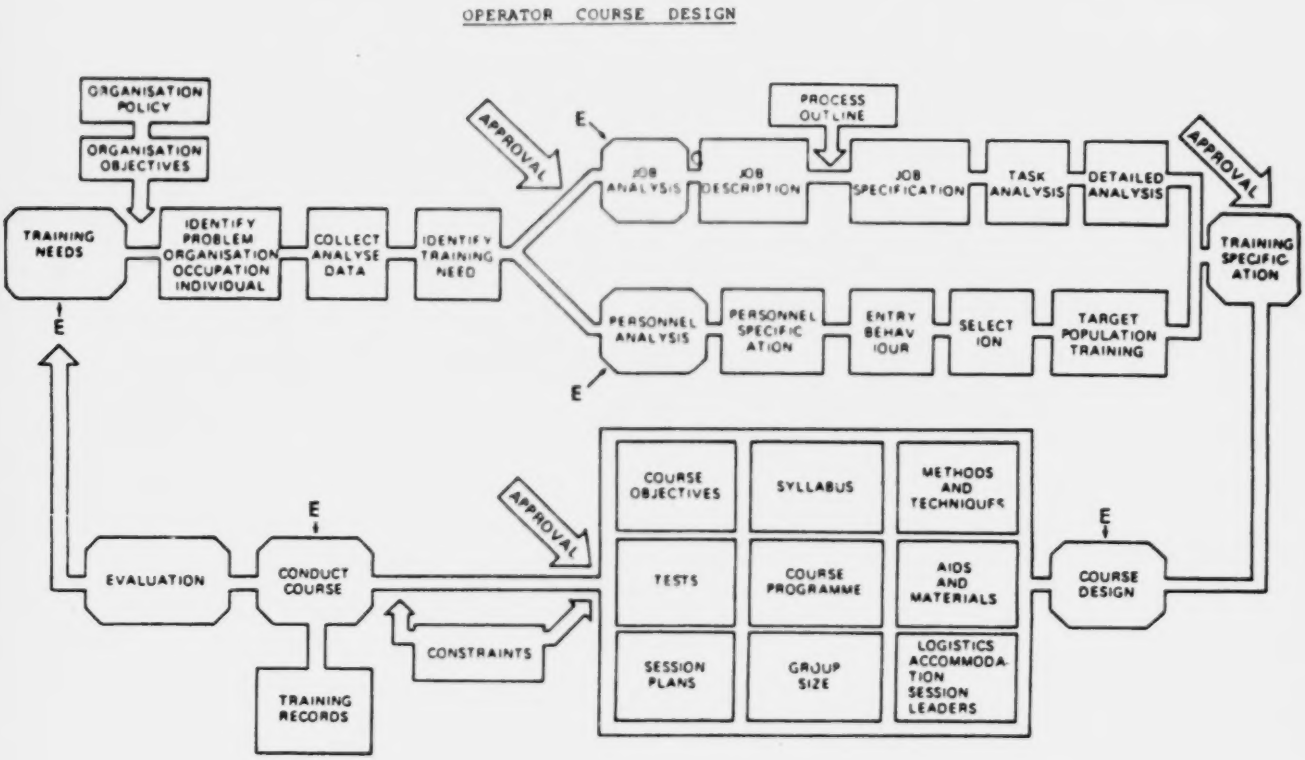

Figure 2. The systems approach (from a National Trainer Training Service course handout)

However, a major influence on the training model used in organisations surveyed was the corporate philosophy - the strategic approach.

5.2 STRATEGIC APPROACH

The variable of 'strategic approach' that was part of the original research design proved a useful one, even though it did not manifest itself in anticipated manner. The approaches to training, as categorised by Kane, were evident in the organisations visited, and it seemed that there was a relationship between those approaches and the type of educational methodology used.

One large organisation that admitted having a very 'hit and miss' style of training up to 1982, had developed, since that date, an integrated training programme that could be categorised as a 'Human Resource Development' approach. The model that had evolved was based on Nadler's (1983) distinction between training, education and development. (See fig. 3) While it is recognised that the use of these distinctions has been severely criticised and that attempts to separate 'training' from 'education' are somewhat spurious, if the labels are ignored, the model serves a useful purpose in indicating appropriate strategic approaches and educational methodology for the various roles of a training and development function in an industrial setting.

TRAINING	EDUCATION	DEVELOPMENT
improve present job	prepare for future job	maintain a state of learning readiness
immediate low cost low risk investment	future med cost short term med risk invest	not job related high cost long term high risk investment
departmental responsibility	management responsibility	corporate responsibility
training does not 'fix' people problems		
operatives	identified high fliers	all

Figure 3. Hierarchy of training model

In this example, the model was closely related to the organisational development and the organisational structure of the company. During the same period that the training model was introduced, the organisational structure was adapted to take advantage of the training and development initiatives in each of the three areas. Thus the 'training' became the responsibility of departments, with supervisors being accountable for the training of their workers. The organisational structure was 'flattened' to reduce the previous nine levels of management down to four. This had the effect of increasing the level of managerial and supervisory responsibility at each level, making the 'education' activities important for the identified 'high

fliers' who were needed to fill those enhanced positions at each level. Finally, because there was also a system of performance appraisal in which initiative was rewarded, the 'development' activities became important avenues for whereby individuals could enrich their careers and the company could take advantage of the innovative skills of its human resources.

The effect of this strategic approach on the educational methodology was considerable. Needs analyses were systematically carried out, courses and other training activities were developed using a variety of methods and the teaching methodologies were varied and included interactional and transactional modes.

Another organisation had not attempted to categorise its activities into training, education and development but had endeavoured at least to expand training beyond basic training for manual functions. What seemed to evolve was an attempt to 'round' the training experience for employees and, probably more significantly, expand the awareness of supervisors and middle managers of the importance of distinguishing between those problems that are amenable to 'training', those that require other educational or developmental activities, and those that are not relevant to training and development at all. This could be categorised as an Individual Development approach. One result of this approach on the educational methodology was the use of a 'flow-chart' for trainers (see fig. 4). Thus, again the educational methodology, predominantly 'developmental', tended to be shaped by the strategic approach.

The effects of this strategic approach (resulting in a somewhat simple educational methodology, with what could augmented by traditional teaching modes, largely 'teacher-centred' or 'developmental') nevertheless generated a benevolent style of company training and development which had profound effects on employee loyalty as evidenced by low staff turnover and absenteeism.

5.3 SUGGESTIONS

During the interviews, a range of suggestions to improve training effectiveness and co-operation between industry and TAFE were made by industrial trainers. These are described briefly below:

- Production of a TAFE/Industry partnership journal. It was suggested that this could be published by the printing trade at 'no cost', with TAFE providing the editorial component. An alternative would be for a TAFE/Industry partnership committee to use existing publications for the promotion of TAFE/Industry links and co-operation.

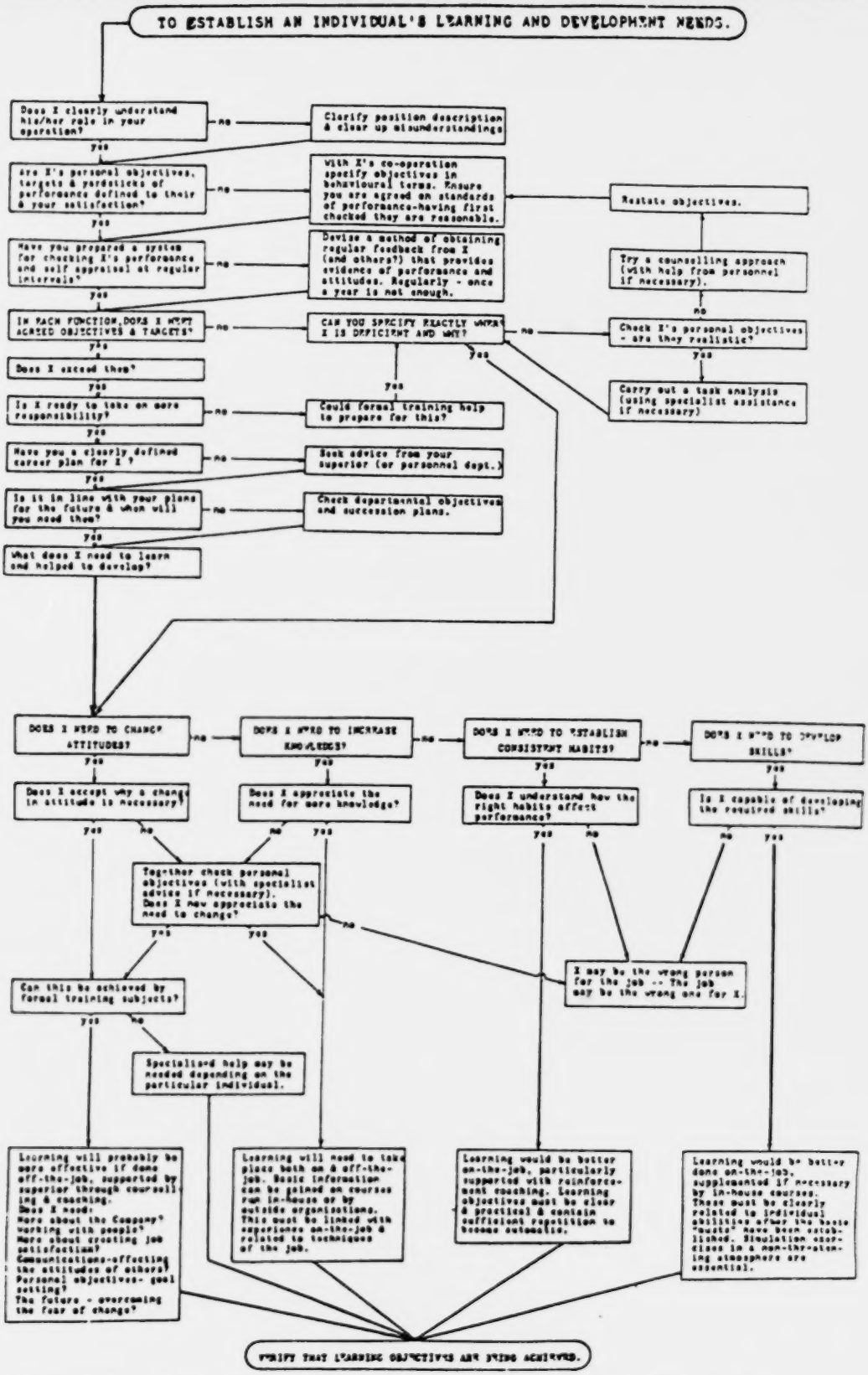
TO ESTABLISH AN INDIVIDUAL'S LEARNING AND DEVELOPMENT NEEDS.
Does X clearly understand his/her role in your operation?
no
Clarify position description & clear up misunderstandings
yes
Are X's personal objectives, targets & yardsticks of performance defined to their & your satisfaction?
no
With X's co-operation specify objectives in behavioural terms. Ensure you are agreed on standards of performance-having first checked they are reasonable.
Restate objectives.
yes
Have you prepared a system for checking X's performance and self appraisal at regular intervals?
no
Devise a method of obtaining regular feedback from X (and others?) that provides evidence of performance and attitudes. Regularly - once a year is not enough.
Try a counselling approach (with help from personnel if necessary).
yes
IN EACH FUNCTION, DOES X MEET AGREED OBJECTIVES & TARGETS?
no
CAN YOU SPECIFY EXACTLY WHERE X IS DEFICIENT AND WHY?
no
Check X's personal objectives - are they realistic?
yes
Does X exceed them?
yes
yes
Carry out a task analysis (using specialist assistance if necessary)
Is X ready to take on more responsibility?
no
Could formal training help to prepare for this?
yes
Have you a clearly defined career plan for X ?
no
Seek advice from your superior (or personnel dept.)
yes
Is it in line with your plans for the future & when will you need them?
no
Check departmental objectives and succession plans.
yes
What does X need to learn and helped to develop?
DOES X NEED TO CHANGE ATTITUDES?
no
DOES X NEED TO INCREASE KNOWLEDGE?
no
DOES X NEED TO ESTABLISH CONSISTENT HABITS?
no
DOES X NEED TO DEVELOP SKILLS?
yes
yes
yes
yes
Does X accept why a change in attitude is necessary?
Does X appreciate the need for more knowledge?
Does X understand how the right habits affect performance?
Is X capable of developing the required skills?
yes
no
no
yes
yes
no
no
yes
Together check personal objectives (with specialist advice if necessary). Does X now appreciate the need to change?
yes
yes
no
X may be the wrong person for the job -- The job may be the wrong one for X.
Can this be achieved by formal training methods?
yes
no
Specialised help may be needed depending on the particular individual.
Learning will probably be more effective if done off-the-job, supported by superior through counselling & coaching.
Does X need:
More about the Company?
Working with people?
More about creating job satisfaction?
Communications-effecting the attitudes of others?
Personal objectives- goal setting?
The future - overcoming the fear of change?
Learning will need to take place both on & off-the-job. Basic information can be gained on courses run in-house or by outside organisations. This must be linked with experience on-the-job & related to techniques of the job.
Learning would be better on-the-job, particularly supported with reinforcement coaching. Learning objectives must be clear & practical & contain sufficient repetition to become automatic.
Learning would be better done on-the-job, supplemented if necessary by in-house courses. These must be closely related to individual abilities after the basic "skills" have been established. Simulation exercises in a non-threatening atmosphere are essential.
VERIFY THAT LEARNING OBJECTIVES ARE BEING ACHIEVED.

Figure 4. Supervisor's flow chart for individual development training model. (From Rothman Pall Mall Australia staff training manual.)

- Establishment of more training centres. An increase in the number of training centres established at industrial sites to provide a 'practical environment' where apprentices can gain structured practical experience on specialist equipment. The emphasis here was on industry specific centres with one in each state, all with a common curriculum.

- Visiting speaker project. TAFE/Industry group to investigate and organise tours by visiting speakers from overseas/interstate to address TAFE/Industry gatherings on the latest in technology and training.

- Expansion of 'Workskills Australia' to non-apprentice areas. The development of a range of competitive workskills events for non-apprentice trainees.

- Elaboration of cadetship scheme to encourage career/succession planning.

- Expansion of the use of mobile training units.

- TAFE follow-up for NTTS programmes.

- More flexibility in timing, scheduling and mode of TAFE courses.

- Production of TAFE/Industry directory of trainers, courses and facilities.

- The initiation of a major TAFE research and development project into supervisor training.

6. CONCLUSIONS

It would be fair to comment that the overall impression of current training and staff development in Australian industry is depressing. This is not to say however that there are not some notable and exciting exceptions.

6.1 AREAS OF STRENGTH

Apprentice training is, without doubt the most competently accomplished training in Australian industry. The extremely high standards of craftsmanship and workmanship displayed in the Workskills Australia competitions is evidence of some excellent training by very able instructors. Some the larger organisations in particular, had excellent facilities and the potential access to the latest machines and technology. There was also encouraging signs that companies were prepared to train apprentices, in the knowledge that some would be employed elsewhere.

Management training in most organisations was well catered for with managers, particularly at the senior level, taking advantage of tertiary institutions and management consultancies. General staff training in some of the service industries was well managed with much care being taken to ensure competence in customer contact skills.

The few companies that had impressive training departments produced well documented syllabus, curriculum and instructor materials and very good quality course materials and audio-visual aids. There was evidence in two companies of a genuine, and apparently successful, attempt to integrate the training function into the corporate plan and to relate training activities to other corporate systems like quality circles, performance appraisal and career/succession planning.

6.2 AREAS OF WEAKNESS

The overriding impression of industrial training in Australia was that it was unco-ordinated and ad-hoc. With the exception of apprentice training in some of the larger organisations, training did not seem to be approached at all systematically. Training policies were usually non-existent, or if they did, were frequently vague or rhetorical.

Supervisor training was the area found to be most seriously lacking. About a quarter of the organisations visited had adequate to good supervisor training programmes, while the remainder appeared to be unsatisfactory in this important area. Management training was much better catered for, but even here there was a need for much greater clarity of purpose and well-defined goals. Management training tended to follow the 'Cafeteria' style with little evidence of any relationship to corporate plans or objectives. For both supervisors and managers, there seemed to be a need for systematic training in some of the basic skills of decision-making and problem-solving, especially in the human relations areas. Moreover, the failure to use TAFE facilities and expertise was disappointing.

It was more than evident that there existed an urgent need for industrial trainers to pay more attention to identifying training needs, setting precise training objectives, developing systematic course development procedures and producing good quality course materials and instructor documentation. Also, in the interests of economy and efficiency, there also exists as a urgent need to develop some proper and effective evaluation techniques to ensure that the money spent on training is spent wisely.

6.3 TOWARDS TAFE/INDUSTRY TRAINING MODEL

Where there was an identifiable model in industrial training it resembled a systems approach which tended to create somewhat 'static' training activities. Needs were established from studying existing practice and outcomes measured from the success in the achievement of behavioural objectives. It is unlikely however that this approach will ever attract the enthusiastic support of senior executives as it does not take into account the often rapid changes in technology and organisational structure that are necessary in today's industrial economy. Also this systems approach fails to provide sufficient opportunity for human entrepreneurial imagination.

What is needed is a more open model which will accept input from industry, TAFE and government and which will allow a faster response time. It should encourage co-operation between government, TAFE, industry managers and industrial trainers. In addition, it should include needs analysis, objectives setting, testing procedures, training syllabi, course design, teaching methodology and evaluation. The challenge exists to produce such a model.

APPENDIX A: QUESTIONNAIRE

TAFE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT LTD.
296 Payneham Road, Payneham, South Australia 5070, Australia. Phone (08) 42 7905
(Incorporated in South Australia)

TAFE INDUSTRY PARTNERSHIP

SURVEY TO IDENTIFY AND EVALUATE TRAINING PROGRAMS

IN COMMERCE AND INDUSTRY

OCTOBER 1987

TAFE INDUSTRY PARTNERSHIP

SURVEY TO IDENTIFY AND EVALUATE TRAINING PROGRAMS

IN COMMERCE AND INDUSTRY

This Questionnaire is designed to find out about your organisation's training activities.

Please answer the questions as fully as possible.

Thank you very much for your time and cooperation.

1. IDENTIFICATION

Your Name: _____

Your Title: _____

Your Organisation: _____

Address: _____

_____

_____ Post Code: _____

Telephone: _____

Total Number of Employees: _____

1.1 Brief description of organisation

Please describe briefly the major function of your organisation.

_____

_____

_____

1.2 Training programs

Please list the training programs that are offered to employees in your organisation.

1.2.1 Apprentice training

_____

_____

_____

1.2.2 General staff training

1.2.3 Supervisory/management training

2. TRAINING AND DEVELOPMENT FACILITIES

2.1 Staff

Please list those staff who are involved in providing the training and development in your organisation.

NAME	POSITION	ACADEMIC/PROF QUALIFICATIONS	TRAINING INVOLVEMENT
EXAMPLE:			
Mr F Smith	*Training Officer*	*B.Sc(eng), TOPS 1 course*	*Supervisor Training*

2.2 **Facilities**

Do you have special Training and Development facilities?

2.2.1 For apprentice training? Please describe briefly.

_____

_____

_____

2.2.2 For general staff training? Please describe briefly.

_____

_____

_____

2.2.3 For supervisor/management training? Please describe briefly.

_____

_____

_____

3. IDENTIFICATION OF TRAINING NEEDS

In this section please give details of how your organisation identifies its training needs.

3.1 Training needs analyses

3.1.1 Has your organisation undertaken or commissioned a training needs analysis, labour market analysis or industry analysis in the past five years? Please circle YES or NO below:

YES

NO (If NO please explain why and go onto question 4.)

_____

_____

3.1.2 Who undertook the analyses?

Brief title of Analysis	Date	Undertaken by inhouse /	consultants
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3.1.3 Please indicate the analysis methods used in the analyses

	APPRENTICE TRAINING	GENERAL TRAINING	SUPERVISOR/ MGT TRAINING
1. The main method used was (circle one number for each study):			
CODAP method.....	01	01	01
DACUM method.....	02	02	02
Task analysis method.....	03	03	03
Critical incident technique	04	04	04
Delphi method.....	05	05	05
Nominal group technique...	06	06	06
Force field analysis.....	07	07	07
Other observation methods.	08	08	08
General mail survey methods	09	09	09
General interview methods.	10	10	10
Other method..... (please specify):...	11	11	11
	.....	.....	.....
	.....	.....	.....
2. Have the 'results' of each study been implemented?			
a) no.....	1	1	1
b) not yet, but will be.	2	2	2
c) partly implemented...	3	3	3
d) fully implemented....	4	4	4
3. Do you have any further comments on each study (such as details of methods)?	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

4. COURSE DEVELOPMENT

In this section please give details of how you proceed to develop training courses and training materials.

4.1 Curriculum development

4.1.1 Who is responsible for the policy on the range of training that is offered by your organisation?

NAME AND/OR JOB TITLE	AREA(S) OF TRAINING FOR WHICH RESPONSIBLE

4.2 Course/syllabus development

4.2.1 Who is responsible for the development of training courses in your organisation?

NAME AND/OR JOB TITLE	AREA(S) OF TRAINING FOR WHICH RESPONSIBLE

4.2.2 Who is responsible for the course content/syllabus?

NAME AND/OR JOB TITLE	AREA(S) OF TRAINING FOR WHICH RESPONSIBLE

4.2.3 How are training courses developed in your organisation?

	APPRENTICE TRAINING	GENERAL TRAINING	SUPERVISOR/ MGT TRAINING
Totally 'In House'			
Mostly 'In House' with some external input			
Mostly with external materials			

5. TRAINING METHODOLOGIES

In this section please describe the training methods that are used in your organisation.

5.1 Apprentice training

Which of the following teaching methods are used in your apprentice training? (Please tick as appropriate.)

	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures				
Practical sessions				
Structured video courses				
Computer based training packages				
On the job instruction				
Syndicate groups				
Seminars/workshops				
Residential courses				

5.2 General training

Which of the following are used in your general training? Please tick as appropriate.)

	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures				
Practical sessions				
Structured video courses				
Computer based training packages				
On the job instruction				
Syndicate groups				
Seminars/workshops				
Residential courses				

5.3 Supervisor/management training

	MUCH USED	SOMETIMES USED	RARELY USED	NOT USED
Classroom lectures				
Practical sessions				
Structured video courses				
Computer based training packages				
On the job instruction				
Syndicate groups				
Seminars/workshops				
Residential courses				

5.4 Use of external training

Does your organisation use any external training agencies as listed below?

	APPRENTICE TRAINING	GENERAL TRAINING	SUPERVISOR/ MGT TRAINING
Consultants delivering training on site			
Consultants delivering training outside			
Tertiary Institutions (Institute of Technology/CAE/ University)			
TAFE colleges			

5.5 External training

Please describe briefly the extent of training done by outside agencies in your organisation.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

6. ASSESSMENT AND EVALUATION

In this section please give information on the methods used to assess the course participants learning and evaluate the effectiveness of the training done in your organisation.

6.1 Assessment

6.1.1 What methods of assessment do you use to assess the participants of your courses? (Please tick appropriate cell.)

TYPE OF COURSE	APPRENTICE	GENERAL STAFF	SUPERVISOR/ MANAGER
Written tests			
Written exams			
Continuous assessment			
Practical tests			
Observation			
Follow-up observations on job			
Other (please specify)			
None			

6.1.2 Who does your assessment? (Please tick appropriate cell.)

	APPRENTICE	GENERAL STAFF	SUPERVISOR/ MANAGER
Course director			
Course presenter			
External examiner			
Self assessment			
Peer assessment			
Other (please specify)			

6.2 Evaluation

6.2.1 What methods of course evaluation do you use? (Please tick appropriate cell.)

	APPRENTICE	GENERAL STAFF	SUPERVISOR/ MANAGER
Internal review			
External review			
Participant reaction questionnaire			
Pre/Post test on participants			
Other (please specify)			
None			

6.2.2 Who does your course evaluation? (Please tick appropriate cell.)

	APPRENTICE	GENERAL STAFF	SUPERVISOR/ MANAGER
Course presenters			
External consultants			
Other			

6.2.3 To what use do you put the results of your evaluation?

_____

_____

_____

7. LIAISON WITH OTHER TRAINING INSTITUTIONS

In this section please describe the extent of liaison between your organisation and other training institutions.

7.1 Liaision with TAFE

Please indicate what liaison you have with TAFE in the following training initiatives.

7.1.1 Apprentice training

7.1.2 General staff training

7.1.3 Supervisor/management training

7.2 Liaison with government training agencies (e.g. TTS, Department of Labour and Industry etc)

Please indicate any areas of liaison between such agencies and your organisation in the following areas.

7.2.1 Apprentice training

7.2.2 General staff training

7.2.3 Supervisor/management training

7.3 Liaison with other training/educational agencies

Please give details of any other liaison with other outside agencies in the training area. (E.g. membership of syllabus committees or accreditation boards, participation in Senior Management courses at UNSW AGSM, Kepner Tregoe, Louis Allen or other management consultant groups.)

APPENDIX B: FORM LETTER

TAFE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT LTD.
296 Payneham Road, Payneham, South Australia 5070 Australia Phone (08) 42 7905
(Incorporated in South Australia)

Our Reference: HP41/JB/JS

19 November, 1987

Dear

Further to our telephone conversation recently, I should like to thank you for agreeing to participate in my investigations.

My survey is part of a larger research project on TAFE INDUSTRY PARTNERSHIP which is aimed at encouraging more effective relationship in course development and implementation.

This survey is designed to identify and evaluate training models used in industry. The information you provide will greatly assist the establishment of a better understanding of current training initiatives in commerce and industry and hopefully will point the way to useful methods of making training more efficient and effective.

I would be grateful if you could complete the enclosed questionnaire in readiness for our meeting.

As arranged on the phone I shall be pleased to meet you on Monday 30 November, at 10.00 am.

Yours sincerely,

John Bone
Research Consultant
TAFE National Centre for Research and Development

Enc.

REFERENCES

Birnbrauer, H. (1986). 'Evaluation techniques that work', Training and Development Journal, 53-55.

Campbell, C. P. (1987). 'Instructional systems development: a methodology for vocational-technical training', Journal of European Industrial Training, 11(5), 1987.

Cornwell, J. B. (1980). 'Measuring back-on-the-job performance', Training, 289-.

Delahaye, B., & Smith, B. (1987). 'Warning - now you have to prove you have trained them', Human Resource Management Australia, 5-8.

Donnelly, E. (1987). 'The training model: time for change?', Industrial and Commercial Training, 19(3), 3-6.

Hayton, G., & Williams, B. (1987). Report on survey of methods of occupational training needs analysis. Adelaide: TAFE National Centre for Research and Development.

Kane, R. L. (1986). 'A strategic look at training and development', Human Resource Management Australia, 42-52.

Lane, D. (1986). 'Model, model on the wall, which is the best education model of them all', Training and Development in Australia, 13(3), 9-12.

Nadler, L. (1983). Designing training programs: the critical events model. Reading, Mass.: Addison-Wesley Publishing Co.

Tennant, S. (1987). 'Management development - some ideas', Management Development Journal, 6, 6.

Williams, G. (1985). 'The economics of education and employment - should there be links? in Full Employment - Uncertain Futures, A Collection of Papers by Keynote Speakers. Perth: W.A. Department of Employment and Training.

Wittingslow, G. (1986). Supervisory Behaviour Questionnaire. Canberra: National Training Council.